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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,668	01/29/2004	Julian S. Crawford	033583.00007	5426

7590 04/20/2005

McNair Law Firm, P.A.
P.O. Box 10827
Greenville, SC 29603

EXAMINER

GRAY, JILL M

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/767,668	Applicant(s) CRAWFORD ET AL.	
	Examiner Jill M. Gray	Art Unit 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 17, 18 and 21 is/are pending in the application.
- 4a) Of the above claim(s) 13, 14, 17, 18 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/29/04, 7/26/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I in the reply filed on January 31, 2005 is acknowledged. The traversal is on the ground(s) that there is only a single invention presented for consideration, i.e. a multicomponent conductive yarn and method claims 15-16 and 19-21 are restricted to the method of forming that product, and that no extra burden is placed on the PTO because any complete search of the claims of Groups I, II or IV must include both class 428/373 and class 264/173. Applicants also argue that Groups II and IV do not fit the example of unrelated inventions in the MPEP which states that two combinations disclosed having different function are independent inventions, further arguing that the claims are directed to the single invention of a method of forming a multi-component conductive yarn. Finally, applicants argue that the prosecution of combined claims 13, 14, 17, 18 and 21 places no additional burden on the PTO and at best claims 13 and 14 constitute a first species while claims 17 and 18 constitute a second species. This is not found persuasive because the method claims 17 and 21 have methods steps that are distinct from one another. This results in independent and distinct methods, or more specifically, independent and distinct inventions. Because the product of the methods results in yarns similar to that of Group I, the yarn necessarily can be produced by separate and distinct methods, as set forth in the restriction requirement. This results in a burden to the PTO because it necessitates the searching of separate and independent inventions. Having the same classification does not preclude separate, distinct and independent inventions. Also, inventions are

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unrelated if they have different modes of operation or different effects. The inventions of claims 13-14, 17 and 21 clearly have different modes of operation and different effects. Regarding claims 13, 14, 17, 18 and 19, as set forth previously, these inventions contain patentably distinct method steps. This results in separate and distinct inventions, which results in a burden to the PTO. Furthermore, if these claims constitute a first species and a second species, in the event that the restriction requirement were to be withdrawn, the examiner may require applicant to elect a single disclosed species for examination.

The requirement is still deemed proper and is therefore made FINAL.

Currently, claims 1-12 are under prosecution.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igure et al, 6,710,242 B1 (Igure) in view of Patel et al, 6,528,572 B1 (Patel).

Igure teaches a sheath/core composite conductive fiber comprising a primary component of at least one elongated filament formed of polymeric material and a secondary component which is a blend of polymeric material and carbon bonded with said primary component along its length. The carbon material of said secondary

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material is present in amounts of 10-50% by weight, per claims 1 and 4. See abstract and column 2, lines 16-18. In addition, Igure teaches that the polymeric material of the primary component and the secondary component can be polyester, as required by claims 2 and 3 and the secondary component can comprise between 0.5% to 50% of the yarn, per claim 6 and is set per claim 9. See column 2, lines 19-21 and Examples. Igure does not teach carbon nanotubes.

Patel teaches conductive polymer compositions comprising polymeric resins such as polyester and electrically conductive filler materials. These filler materials can be carbon black or carbon fibers such as carbon nanotubes wherein the nanotubes are used in amounts less than or equal to about 30 wt% and more preferably less than or equal to about 5 wt%. The conductive resin is used to make various articles. The teachings of Patel would have provided a suggestion to the skilled artisan that in the production of conductive polymers, carbon nanotubes could be used instead of carbon black with the reasonable expectation of successes. Furthermore, Patel teaches that carbon nanotubes can be used in amounts as low as 0.025 wt%. This would have provided motivation to the skilled artisan to modify the teachings of Igure by using carbon nanotubes instead of carbon black as the conductive filler, with the reasonable expectation of obtaining a conductive polymeric composition and fiber with minimal filler loading without sacrificing the mechanical properties of the resultant fiber.

Therefore, the combined teachings of Igure and Patel would have rendered obvious the invention as claimed in present claims 1-4, 6 and 9.

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Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hodan 5,840,425 in view of Patel et al, 6,582,572 B1 (Patel) as applied above.

Hodan teaches multicomponent fibers comprising a primary component of at least one elongated filaments and a secondary component that is a blend of polymeric material and carbon, wherein the fibers can be in a sheath/core configuration or side-by-side, per claims 1 and 4-5. In addition, the primary component and secondary component can be polyester, per claims 2-3. See column 5, lines 1-7 and lines 62-65. The fibers of Hodan are coated with his secondary component which is an electrically conductive coating containing carbon black, wherein the coating can take place during the fiber manufacturing step or as a separate step. Hence, Hodan teaches a sheath (claim 4), the primary component being set prior to bonding with the secondary component (claim 8), the filaments being set prior to bonding with secondary components (claim 12) and the primary component comprising a plurality of filaments that can be formed of different polymers, (claims 10 and 11). Also, Hodan teaches that his carbon black is present in amounts as low as 2%. See column 4 lines 8-19 and lines 47-49. Hodan does not teach the usage of carbon nanotubes. Patel is as set forth above and would have provided motivation to the skilled artisan to substitute the carbon black of Hodan with carbon nanotubes with the reasonable expectation of obtaining a conductive fiber with lowered amounts of filler loading.

Therefore, the combined teachings of Hodan and Patel would have rendered obvious the invention as claimed in present claims 1-12.

No claims are allowed.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill M. Gray whose telephone number is 571-272-1524. The examiner can normally be reached on M-F 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jill M. Gray
Examiner
Art Unit 1774

jmg